

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 30508

CSAH NO. 10

OVER THE

RUM RIVER

DISTRICT 3 - ISANTI COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY
COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 77)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 30508, Piers 1 and 2, were found to be in good and sound condition, similar to the findings of the last inspection, with no defects of structural significance. The channel bottom around both piers appeared stable with no significant scour and no exposed footings, and with an overall configuration essentially the same as was found during the previous inspection.

INSPECTION FINDINGS:

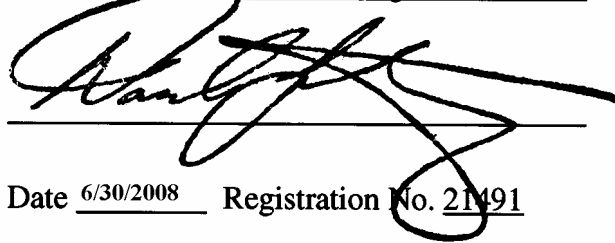
- (A) Overall, the submerged concrete of Piers 1 and 2 was in good and sound condition with light scaling having 1/8 inch typical penetrations from 1 foot below waterline to 1 foot above the waterline.
- (B) A minor scour depression with 2 foot radius and 6 inch depth was observed at the upstream nose at Pier 2.

RECOMMENDATIONS:

- (A) Reinspect all substructure units underwater within the normal maximum (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over two horizontal lines.

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over two horizontal lines.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 30508

Feature Crossed: Rum River

Feature Carried: CSAH No. 10

Location: District 1 - Isanti County

Bridge Description: The bridge superstructure consists of three continuous, multiple steel beam spans supported by two concrete piers and two concrete abutments. Both the piers and abutments are founded on timber piles. The piers are numbered 1 and 2 starting from the east end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Bradley A. Syler, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 17, 2007

Weather Conditions: Partly Cloudy, 60°F

Underwater Visibility: 1.0 foot

Waterway Velocity: 1.0 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: Each pier consists of a rectangular shaft with rounded ends which rests upon a rectangular footing supported on timber piles.

Maximum Water Depth at Substructure Inspected: Approximately 5.3 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the upstream end of Pier 2.

Water Surface: The waterline was approximately 23.2 feet below reference.
Water Elevation = 891.7.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/10/07

Item 113: Scour Critical Bridges: Code O/96

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

 Yes X No



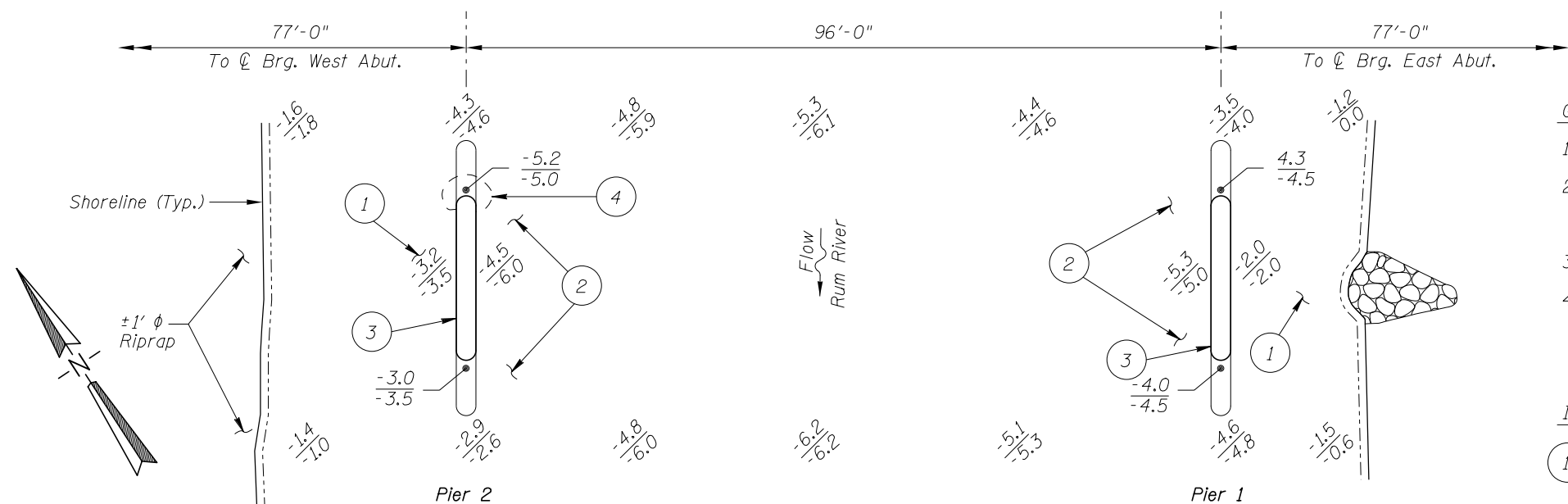
Photograph 1. Overall View of the Structure, Looking Northeast.



Photograph 2. View of Pier 1, Looking West.



Photograph 3. View of Pier 2, Looking West.



GENERAL NOTES:

- Piers 1 and 2 were inspected underwater.
- At the time of inspection on October 17, 2007, the waterline was located approximately 23.2 feet below the top of pier cap at the upstream end of Pier 2. This corresponds to a waterline elevation of 891.7 based on the previous report on September 25, 2002.
- Soundings indicate the water depth at the time of inspection and are measured in feet.
- Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

- The channel bottom consisted of 8- to 12-inch-diameter riprap and sand, with no appreciable probe rod penetration.
- The channel bottom consisted of firm sandy gravel with probe rod penetrations of 2 to 3 inches.
- The concrete surface was in smooth and sound condition with light scaling from 1 foot above to 1 foot below the waterline with up to 1/8 inch of penetration.
- A minor scour depression, 2 feet in radius by 6 inches deep, was observed around upstream nose of Pier 2.

Note:

All soundings based on 2007 waterline location.

Legend

-7.0 Sounding Depth (10/17/07)
-6.0 Sounding Depth (9/25/02)

Scour Depression

±1' Diameter Riprap

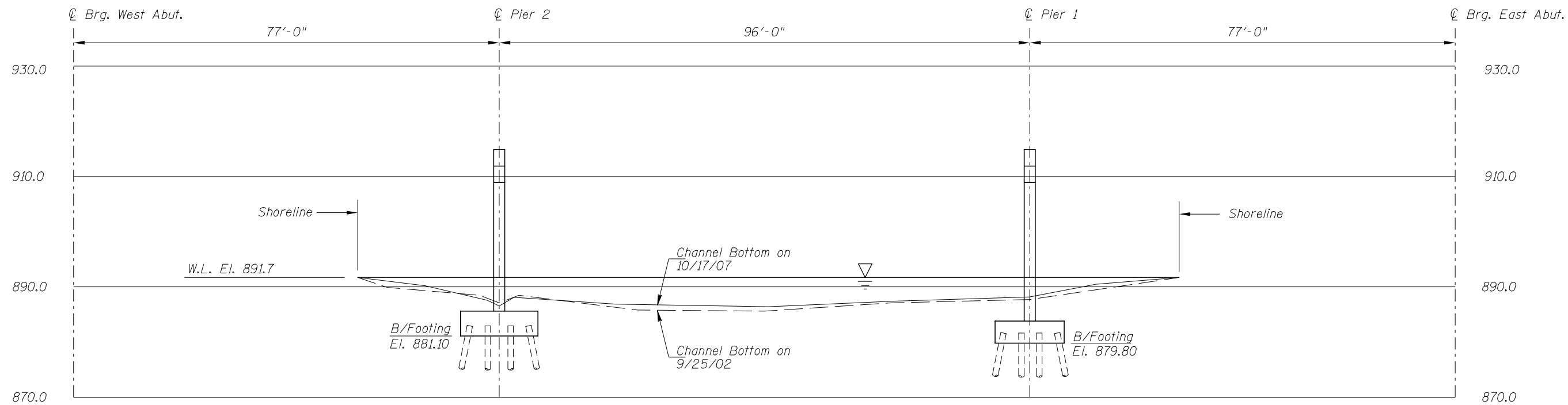
MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION

STRUCTURE NO. 30508
OVER THE RUM RIVER
DISTRICT 3, ISANTI COUNTY

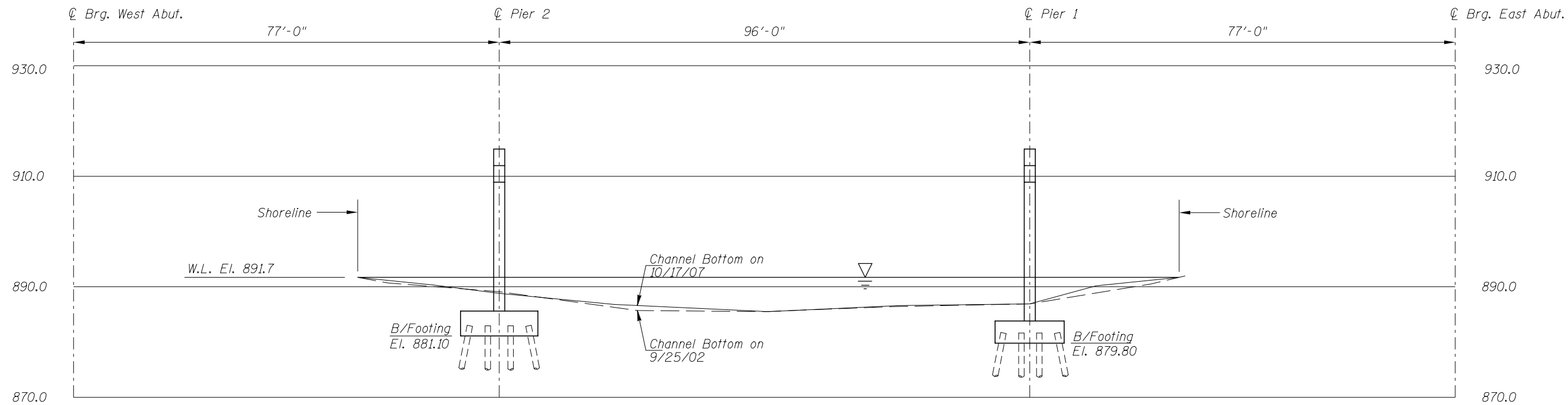
INSPECTION AND SOUNDING PLAN

Drawn By: MDK	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT, 2007
Checked By: DGS		Scale: NTS
Code: 52210077		Figure No.: 1

TYPICAL END VIEW OF PIERS



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 30508 OVER THE RUM RIVER DISTRICT 3, ISANTI COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: MDK	COLLINS ENGINEERS	Date: OCT, 2007
Checked By: DGS		Scale: 1"=20'
Code: 52210077		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 17, 2007

ON-SITE TEAM LEADER: Bradley A. Syler, P.E., S.E.

BRIDGE NO: 30508 WEATHER: Partly Cloudy, 60°F

WATERWAY CROSSED: Rum River

DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER

PERSONNEL: Clayton G. Brookins, Valerie Roustan

EQUIPMENT: SCUBA, U/W Light, Scraper, Lead Line, Sounding Pole, Probe Rod, Camera

TIME IN WATER: 8:05 a.m.

TIME OUT OF WATER: 8:35 a.m.

WATERWAY DATA: VELOCITY 1.0 f.p.s.

VISIBILITY 1.0 foot

DEPTH 5.3 feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the submerged concrete of Piers 1 and 2 was in good and sound condition with light scaling 1/8 inch typical penetrations from 1 foot below waterline to 1 foot above the waterline. The channel bottom around both piers appeared stable and the overall configuration was comparable to the last inspection findings. A 2-foot-radius, 6-inch-deep scour pocket was observed at the upstream nose at Pier 2.

FURTHER ACTION NEEDED: YES X NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 30508
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Bradley A. Syler, P.E., S.E.
WATERWAY CROSSED Rum River

INSPECTION DATE October 17, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	SUBSTRUCTURE						CHANNEL					GENERAL					
			PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	5.3'	N	7	N	9	N	7	8	8	8	N	8	7	N	N	N	N	N
	Pier 2	5.2'	N	7	N	9	N	7	7	8	8	N	7	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the submerged concrete of Piers 1 and 2 was in very good and sound condition with light scaling 1/8 inch typical penetrations from 1 foot below waterline to 1 foot above the waterline. The channel bottom around both piers appeared stable and the overall configuration was comparable to the last inspection findings. A 2-foot-radius, 6-inch-deep scour pocket was observed at the upstream nose at Pier 2.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO. USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.